

## Qualitative Health Research

### Parents' Perception about Their Preterm Child's Social Interaction upon Reaching School Age

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**Abstract**

A key element in social development is interaction with others, and preterm infants have an increased risk for problems in this aspect. We aimed to gain additional insight into parents' perception about their preterm child's social interaction upon reaching school age. Parents informed us about their child being a little fighter, having issues of coping with their disabilities in social contexts, and how their child withdraws from situations that are overly stimulating. They also expressed their concerns about the future, how they encourage their child, and how they experience the transition to primary school. Parents' experiences concerning the social interaction of their preterm child can be categorized into eight themes of processes in social interaction: child factors, self-regulation, real-time social interaction, long-term social interaction, parental factors, parenting, social environment, and social experiences. Our proposed model of social interaction in preterm infants visualizes the interrelatedness between these themes in social interaction.

**Keywords**

parenting; research, qualitative; relationships, parent-child; social development; childbirth; children, disability; children, growth and development;

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3 Prematurity is an urgent public health issue (March of Dimes, 2012). Yearly, approximately  
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5 15 million babies are born preterm, affecting families worldwide. After an often difficult  
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7 beginning, preterm infants have an increased risk for adverse effects in later development. In  
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9 follow-up studies on children born very preterm, problems in various domains of  
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11 development are reported including the social and emotional domains (Aarnoudse et al. 2009;  
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13 Van Baar et al., 2005; Potijk et al., 2012; Johnson & Marlow, 2011).

16 One of the key processes in social emotional development is social interaction with  
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18 others. During social interaction, social skills are acquired which subsequently influence  
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20 social, emotional, and cognitive development (Reis & Collins, 2000). Over the last ten years,  
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22 there has been increasing scientific and clinical interest regarding the impact of preterm birth  
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24 on social interaction with others (de Groote, Roeyers & Warrein, 2006; Olafsen et al., 2006;  
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26 Ravn et al., 2011). In studies on social interaction in the first years of life, the focus is  
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28 primarily on what is happening in real-time interactions between two persons. For example,  
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30 the ability to share attention with someone about something interesting (joint attention) is  
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32 assumed to be one of the most important processes to acquire language (De Schuymer, 2011),  
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34 and is an expression of the intention of the individual child and the intentions of other people  
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36 (Steenbeek & Van Geert, 2007). Smith and Ulvend (2003) determined that the initiation of  
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38 attention requests of a 13-month-old preterm was significantly related to their intellectual  
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40 outcome at the age of eight, apart from the variance associated with biomedical risk status  
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42 and infant development. At the age of six months, preterm infants are less active, less  
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44 responsive, and less involved in communication exchanges with their caregivers (Salerni et  
45  
46 al., 2007). Preterm infants respond less to initiatives of others (at 12-months) (Olafsen et al.,  
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48 2006) and take fewer initiatives during joint attention activities (shared focus of two persons)  
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50 (De Groote, Roeyers et al. 2006).  
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3 In studies on social interaction at early school age, the focus is mostly on the  
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5 development of social skills and the ability to engage in social relationships. Children born  
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7 very preterm are, at four years of age, characterized by a range of subtle social difficulties  
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9 which affect their ability to establish and maintain positive relationships with others (Jones et  
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11 al., 2013). Wocadlo and Rieger (2006) found that 12.5% of the eight year old premature  
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13 infants were rated by their parents as having impaired social skills. Their social skills were  
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15 significantly different for all social skill components such as cooperation (e.g., sharing and  
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17 complying with rules), assertion (e.g., asking for information) and self-control (e.g.,  
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19 responding appropriately to teasing).  
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23 Social emotional development can be considered a complex process depending on  
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25 both child characteristics and interaction with others such as parents. Parents of preterm  
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27 infants experience more stress than parents of term born infants (Tu et al, 2007), and  
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29 psychological distress among mothers influence the mother-infant interaction (Crapnell et al.,  
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31 2013). In a number of studies, authors report that parents of preterm infants demonstrate  
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33 more controlling and intrusive behavior in the interaction with their infant in the first year of  
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35 life (Feldman, 2007; Forcada-Geux et al. 2006). Subsequently, higher maternal intrusiveness  
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37 is related to less infant involvement (De Schuymer, 2011). Because young infants develop  
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39 socially through interaction with their parents, a stressful event such as preterm birth can  
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41 negatively affect this social interaction.  
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45 Research results on the role of the parents indicates that preterm birth affects  
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47 parenting but, until now, there is little information about the ideas and experiences of parents  
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49 concerning the social interaction of their preterm infant at early school age. Furthermore,  
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51 there is only minimal information about changes in social interaction during the childhood of  
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53 preterm born children. The use of the parental perspective to explore the social interaction of  
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55 preterm children can provide valuable information because parents are the experts in regard  
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3 to the development of their child. They can report their ideas and experiences concerning the  
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5 social interaction of their preterm born children. Additionally, parents have an overview on  
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7 changes in social interaction during the development of their preterm children. Gaining  
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9 insight in the perceptions of parents on the social interaction of these children will provide a  
10  
11 solid foundation for the development of policies to monitor and guide development of  
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13 preterm infants and their parents.  
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17 In the current article, we explored how Dutch parents experience the social interaction  
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19 of their five to eight year old premature born children by using in-depth interviews. Our  
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21 research question is: "How do parents perceive the social interaction of their five to eight-  
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23 year old premature born child?" With our research, we intend to gain additional insight into  
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25 processes and topics concerning child characteristics, social interaction, and parents'  
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27 expectations and beliefs about the perceived social interaction of their preterm infant.  
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## 30 **Methods**

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32 Conducting qualitative research affords the opportunity to explore beliefs, opinions, and the  
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34 actual experiences from the perspective of the concerned individuals, the emic point of view.  
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36 (QHR) Studying the subjective meanings that people attach to their experiences helps to  
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38 understand the social world in which they live (Snape & Spencer 2003). This interpretive  
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40 paradigm can offer new insights by validating the subjectivity of people's experiences and  
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42 perceptions.  
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## 45 *Study design*

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47 The article is in accordance with the qualitative research method as described by Hennink,  
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49 Hutter and Bailey (2010). Characteristic in their approach is that both inductive and  
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51 deductive reasoning is utilized throughout all of the stages of research. In-depth interviews  
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53 were given to gain additional insight in social interaction of preterm infants at school age  
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55 from the perspective of the parents.  
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*Participants*

Twelve caregivers of preterm infants aged five to eight years participated in the in-depth interviews. The children were born after a pregnancy of less than 36 weeks. All participants live in the northern part of the Netherlands. The level of education of the caregivers varied between lower vocational education to university. Ten interviews were performed. In two interviews, both parents participated and, in eight interviews, seven mothers and one stepmother participated.

The participants were selected in birth order from a list of names of preterm infants who previously participated in studies on sucking performance of preterm infants (Da Costa et al., 2010) and their follow-up (Wolthuis et al., 2014). We contacted the parents by telephone. During the telephone call, they received information about the study and the anonymous analyses of the data. With one exception, all caregivers agreed to participate and provided verbal informed consent. The Institutional Review Board of the Hanze University of Groningen provided approval for this research. This research fulfils all the requirements for test subject anonymity and is in accordance with regulations of the review board of the Hanze University of Groningen for publication of subject data (approval number 15030 ML-hina).

*Procedure*

The interview guide consisted of key questions and motivational probes and was based on the research of Steenbeek & Van Geert (2007). The following concepts were included: social competence, social power (popular status or not), concern (goals and intention), appraisal (evaluation of the situation), contagiousness (mimic and imitation), and conversation partners (Steenbeek & van Geert, 2007). The first and the last author conducted the interviews. During and after the interviews, field notes were compiled. All tape-recorded interviews were

transcribed verbatim. After ten interviews, no new meaningful information was obtained, and saturation of information was achieved.

### *Analyses*

Inductive reasoning was predominant during the analytical process. Inductive strategies are characteristic in qualitative data analysis according to grounded theory (Charmaz, 2006). The data were processed with ATLAS.ti. To increase the reliability of the data analysis, three coders independently coded the first interview with open coding and subsequently reviewed for consistency. Discussion occurred until inter coder agreement was reached. The same procedure was repeated with two more interviews with two coders. Codes with similar characteristics were grouped together in meaningful categories. The relationships between categories were studied, and major themes were identified. The first, second, third, and fifth author reached consensus on developed categories and themes. These themes were conceptualized into an inductive conceptual framework.

### **Results**

The preterm infants were not present at the time of the interviews. In a number of cases, there was a younger brother or sister present. In almost all of the cases, the interviews occurred at the kitchen table. The duration of the interviews was between 45 and 90 minutes.

All codes that emerged from our data were grouped into 28 categories and eight main themes, (see Table 1 Identified Themes, Categories, and Examples of Codes).

The results are described for each main theme: child factors, self-regulation, real-time social interaction, long-term social interaction, parental factors, parenting, social environment, and social experiences.

#### *Child Factors*

The primary theme ‘child factors’ includes all characteristics mentioned by the parents when describing their child. In regard to social interaction, parents spoke mainly about the temperament of their child (e.g., passive, little fighter, helpful, ambitious); the appearance of their child (e.g., too small, overweight, having scars); strengths (e.g., intelligent, social); and disabilities (e.g., autism, motor problems, swallowing issues). Certain characteristics were considered as protective and some as hindering in social interaction. Several parents described their child as a little fighter. They associated this characteristic with the premature birth of their child. One mother described the protective function of being a little fighter:

She was a little fighter from the beginning. That is what she had, a very low blood sugar, so she really had to fight with her little body. I think it has become part of her character. She will not give up easily. Now she’s into gymnastics, and she will not give up. It is a strong wiry girl who will go the extra mile to get where she wants to be. I can see her fighting spirit in that. I think it has become part of her character, it’s really her.

A topic that often came up was the hindering impact of disabilities on social functioning. Parents mentioned several limitations such as spastic legs and arms, motor problems, speech and language problems, autism, overweight, underweight, too small, concentration problems, swallowing problems, and learning problems. One parent told the following about her daughter’s feeding and speech problems:

She does not talk a lot; that is difficult for her, with her speech. Also with eating, eating well. But also with talking. She lisps very much, so later she has to go the speech therapist. That’s what they said in the hospital, it’s a phenomenon that’s part of the beginning. And I think she is a bit ashamed of it. That’s why, because she can’t express herself always and she thinks: “Than I say nothing.” Or she says “That!”, at



the table, huh, if she wants the peanut butter. I then say: “What’s that called, R.?” And then she does not say it. Then she thinks: “Yeah, with all those kids around me at the table, I do not feel like it.” While we do not laugh at her though!

### *Self-regulation*

In this main theme, parents describe what the impact is of self-regulation on their child’s social interaction. The theme self-regulation includes aspects of behavior of the child that influence the process of social interaction, for example, frustration or lack of concentration. The parents relayed a wide range of issues on this topic such as withdrawal from situations, busy behavior, problems with adjusting to new situations, and concentration. Several parents mentioned withdrawal as a strategy for restoring balance. In especially new and overwhelming situations (too many people, too much noise), some of the children tended to withdraw:

At a given moment, he wants to withdraw back for a minute. Well, I think, it’s probably a bit too much at such a moment. And then he’s like, eh, let me be.

Parents told different stories about the modulation of attention in relationship to social interaction. Some parents described their child as having problems with retaining attention during activities. On the contrary, one mother described her son as someone who can focus entirely on only one thing. A topic in the theme self-regulation that was mentioned several times by the parents is dealing with limitations. Being confronted with a handicap such as problems with motor planning elicits emotions that the child must deal with:

He is spastic in his legs. He walks different than other children. And sure, his sporting activities are affected by it. And you never know how that works at school. If he is

being bullied because of it. Well, maybe we are a bit afraid how that will develop.

And then it comes to this, that he can compete with bigger kids. He is fully accepted.

*Real-time Social Interaction*

With regard to the theme real-time social interaction (interaction within a dyad), parents tell about several components that play a role in the dyad: taking initiatives and following them, sharing experiences, emotions, and imitation. Some children talk spontaneously about their experiences whereas others are not so willing to share. Their parents often have to take the lead:

So, if I ask: “How was school? What have you experienced today?” Well then he will tell a little, but he never comes to me with: “This and this has happened.” No, that happens rarely. He should feel at ease if he wants to talk.

*Long-term Social Interaction*

Within the theme long-term interaction, parents describe the development of the social skills (e.g., to defend themselves) and social position (e.g., being accepted) of their child in relationship to others. When entering primary school, some of the children tend to withdraw and prefer to stay in the background. Later on, they usually develop more social self-confidence. Most children seem to need time for developing social skills:

I was surprised, actually, that she really takes the leading role. Yes, and then I think, where was the T. of two years ago? So there she has really made a change. Now, she takes the leadership role in the game, too.

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3 Visiting school can also be daunting with children who are different than others. One mother  
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5 who is concerned about her daughter's social skills and the ability to defend herself told  
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7 about her overweight daughter:  
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10 It starts to get a little, that I can see in her face that she thinks it's not so fun [being  
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12 bullied with being overweight]. But it is still not the case that she gets awfully  
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14 emotional and sits down on the couch and withdraws. No, not at all. I hope she  
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16 becomes more and more daring and that she stands up for herself.  
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20 Some parents indicated that their children have no problems in establishing relationships at  
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22 all.  
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#### 24 25 *Parental factors* 26

27 This main theme contains beliefs, values, emotions, and concerns of parents with regard to  
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29 forming relationships. These parental factors can be considered as a fundament or basis for  
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31 parenting. Factors that the parents regularly discussed were concerns or emotions as a result  
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33 of the premature birth. In this citation, a mother discusses the impact of the experiences she  
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35 had after the preterm birth of L.:  
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38 I will be honest with you. When E. [the little sister of L.] was born, I've been very  
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40 selfish. No one was allowed to hold her. Only my husband and me. And by God's  
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42 grace, the maternity care was allowed to hold her twice. But I did it all by myself. I  
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44 thought, I do relinquish the care again. I've already relinquish the care twice [with  
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46 L.], and I do not want that again. That was very selfish of me, but I could never do  
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48 that with L. Someone else always decided what should be done with her.  
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54 Concerns about the future was also a theme that emerged regularly when talking with the  
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56 parents about the consequences of preterm birth:  
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I wonder how far he comes. Look, he has a form of autism, but we can get along very well. In itself, in the housing situation, it is very good. At school, in groups, logically, that is difficult. And you have to be as much as possible in a 1 to 1 situation. Can they provide that? They try to do that at school, but is it also achievable in the other groups? If they really need to read and write, does he manage then?

*Parenting*

Parents relayed various strategies they use to support their child such as structuring activities, learning step by step, thinking about solutions, and being encouraging to their child when the child is learning new skills. A category that often emerged in this theme was structuring activities. Parents discussed the necessity of structuring daily activities:

If you prepare him well, then it's okay. On Wednesday, he is always going to his *pake*, so eh, his grandfather. And it is always like that. Then it's no problem. Then it does not matter, because he goes there more often. Because that is in his structure, so, his rhythm. But I always prepare him, I've always done. I do not say, hop, turn off the television, we go!

The categories of structuring behavior and learning step by step were often mentioned in relationship to the limitations that the children have or had as a result of their preterm birth such as problems with motor development, executive functioning, and concentration.

And with food, yes, he is again with D. [sister] or busy with all other things. Then he is easily distracted, I think. That is, I think, an issue. Look, that the food takes a long time, okay. But we can say, okay, he has so much time, and he should have to eat that part. Then he goes for it.

*Social Environment*

The theme social environment contains all interaction partners other than the parents and all contexts in which the child is functioning. Contacts with siblings and peers were most frequently described. Parents often compare the behavior and development of their child with older or younger brothers and sisters or peers. In addition, grandfathers and grandmothers also play an important role in the life of their grandchild. Parents mostly describe the contact of their child with his or her grandparent as secure and only a little demanding.

### *Social Experiences*

Being in different social situations leads to new challenges in social interaction. In this theme, categories were classified with regard to the social experiences the child has as a result of functioning in different social contexts (e.g., transition to primary school, joining a sports club) and with different interaction partners (e.g., making friends, playing with siblings). Several children experience problems in new and unknown situations and require time to adjust to new circumstances, especially the transition to primary school.

One parent describes the effect on social interaction at home resulting from the difficulties with the transition to primary school. A number of children experience problems in social interaction at school because their developmental level does not match the level of their classmates:

He is now in the second grade of the primary school, which he does for the second time. If he had stayed in the same group, he had been overshadowed. That he would not have handled it. No, those guys are way ahead.

### *Relationship between themes*

During the analytical process, we observed that several codes were described in relationship to other codes. In the example below, we see how the imitation of an older brother helps to

develop a social position and social skills. This quotation demonstrates that real-time social interaction and long-term social interaction are closely interrelated:

What I see nowadays is that R. [preterm, 5 years old] is very much focused on J. from two and a half and, as a caring elder, R. wisely tells what J. has to do and what he should not do. Eh, she is the boss right now huh. She has an older brother telling her everything she needs to do, and she is now copying that to J.

The next quotation illustrates the interrelation between self-regulation (daydreaming, frustration) and structuring activities (parenting):

Yeah, too little attention, that's what he shows with undressing. Because, if you walk away, then he is running after us. And then we grumble: "Do you still not have your clothes on?" And then he walks back and I say: "When I come back, I want you to have on your pajamas." Then I am going to clean up the laundry. And when I come back, then he is upset because he is not quite ready. He wanted to be ready, but then you're there again. Maybe he is somewhere else with his thoughts.

The eight broad themes and the way in which they are interrelated is visualized in Fig.1, The model of social interaction.

INSERT FIGURE 1, The model of social interaction ABOUT HERE

The large circle in the center represents the process of social interaction itself, i.e., the core of social interaction. Social interaction is characterized by two patterns. The first pattern consists of activities that occur during real-time interaction such as imitation, sharing emotions, and taking initiatives. This real-time social interaction results in changes in long-term interaction (the second pattern): over time, the child develops an increasing number of social skills (e.g., taking initiative) and a social position (e.g., playing the boss) is established.

The arrow in between represents the interaction between these two patterns. For example: the child learns how to play the boss by imitating an older brother; feeling more self-confident ensures that the child dares to take more initiatives in various situations.

The outer circles represent three main factors that influence the process of social interaction: child factors (e.g., character, disabilities), parental factors (e.g., beliefs, education), and social environment (e.g., living place, school, friends). The arrows between the outer circles and the inner circle represent what occurs during the interaction between these circles. For example: the child requires concentration for learning social skills (self-regulation); parents support the development of social power with parenting strategies (parenting); the social environment provides experiences which invite the child to practice social skills (social experiences).

## Discussion

Parents' experiences concerning the social interaction of their child can be categorized into eight themes that influence processes in social interaction: child factors (e.g., character and limitations), self-regulation (e.g., withdrawal and coping), real-time social interaction (e.g., sharing, taking initiatives), long-term social interaction (e.g., social skills, social position), parental factors (beliefs, feelings), parenting (e.g., regulating behavior, coping), social environment (e.g., activities, school), and social experiences (contact with others as well as functioning at school). The model of social interaction (Figure 2) visualizes how the principle themes of real-time as well as long-term processes in social interaction mutually influence each other.

With regard to child characteristics, parents mentioned disabilities, being a fighter, and self-regulation as important influencing factors in the process of social interaction. Parents reported disabilities in the physical, cognitive, social, and emotional domains. The hindering effect of a disability on the process of interaction is confirmed by the results of

several studies. Gresham et. al. (1989) determined substantial significant differences in peer acceptance as well as social skills between learning disabled children and non-handicapped children between the ages of eight to ten. These differences were evident in both school and home settings. In their article on quality of life of school-age children, Watson & Keith (2002) describe that children experiencing disabilities scored significant lower on the scale of social belonging. Having a disability is a challenge for the child and the parents as well as for the social environment.

Some parents labeled ‘being a fighter’ as a protective factor in social interaction. They suggested that their child’s difficult beginning in life influenced the temperament of their preterm infant in a positive way (not giving up soon). However, in general, no remarkable differences were found between the temperament of preterm and at term infants (Klein et al., 2009; Oberklaid, 1986). This corresponds to the definition of temperament as a moderately stable constellation of biologically based behavioral traits that exerts effects on personality and behavior (Rothbart, 2007). Larroque et al. (2005) described in their article that only preterm infants with cerebral lesions and developmental delay were rated by their parents as significantly more dull, unadaptable, and unpredictable. The observation of our parents that their child is more determined as a result of preterm birth was not found in other articles. This might be explained by the fact that the focus of other studies are only on negative influences of preterm birth and temperament. This observation of determination might also be the result of the impressive experience of watching your child grow from an extremely small and vulnerable newborn to a child who succeeds in going to primary school.

We categorized codes such as inattention, withdrawal, and busy behavior under the category self-regulation. This finding is in accordance with studies on aspects of self-regulation and that preterm infants experience more problems than at term infants in this regard such as increased negative emotionality, sensory sensitivity, inattention, and



hyperactivity (Delobel-Ayoub et al. 2006; Spittle et al, 2009). It is likely that problems in self-regulation in preterm infants might have cascading effects further along in development. At the age of four, preterm infants are twice as likely as their full term peers to exhibit serious emotional and behavioral adjustment problems such as inhibitory control problems (19.4%), emotional regulation problems such as frustration and problems with adapting to change (28.2%), and social interactional problems with others, such as peer play disruption (23.8%) (Jones, Champion & Woodward, 2013). Clark et al. (2008) found in their longitudinal study on behavioral and emotional regulation that children born extremely preterm (< 28 weeks gestation) continued to demonstrate poorer self-regulation at ages two and four than their full term peers. Moreover, at the age of four, parents of the preterm infants reported more difficulties in emotion regulation. This might indicate that these difficulties were becoming more apparent to parents as the children mature and must fulfill school requirements. As a consequence, continued follow-up and tailored intervention seem especially important for preterm infants because problems with self-regulation affect relationships with others and functioning at school as well.

It was also found that parenting is an important mediator in social interaction. Parents employed strategies such as learning step-by-step and giving compliments. Some parents approached their child in a negative manner by criticizing the functioning of their child, for example, by labeling avoidance of activities as laziness. The importance of parenting for social and emotional development is in line with the results of several studies. Poehlmann et al. (2014) ascertained that less intrusive early parenting predicted more secure attachment, better effortful control skills, and fewer early behavior problems in very preterm infants that were prone to distress. At the age of two, a more optimal home environment (i.e., parental involvement, organization of the physical environment, appropriate play materials) was predictive for improved outcomes on mental development, externalizing problems,

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3 internalizing problems, dysregulation problems, and social and emotional competence in very  
4 preterm infants (Treyvaud et al., 2012). Landry, Smith & Swank (2006) taught mothers of  
5 preterm infants responsive behaviors through video procedures during ten home visits.  
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7 Increased maternal responsiveness behaviors facilitated more significant growth in social,  
8 emotional, communicative, and cognitive competence, especially for children born with a  
9 very low birth weight. In summary, these findings in the literature are in accordance with our  
10 findings which suggest that parenting is an important mediator in social interaction.  
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18 With regard to environmental factors, the child's transition to primary school is  
19 described as a monumental step by nearly half of the interviewed parents. Their children  
20 required time to adjust to changing circumstances. Problems in social interaction (e.g.,  
21 withdrawal at school) were influenced, for example, by being younger in cognitive  
22 development, experiencing problems with motor functioning, or having problems with self-  
23 regulation, as is the case with many preterm infants. Roberts et al. (2010) determined that,  
24 overall, 44% of five-year-old preterm infants had vulnerabilities in more than one domain of  
25 school readiness (health and physical development, social and emotional skills, approaches to  
26 learning, communication skills, and cognitive skills) compared with only 16 % of the term  
27 controls.  
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40 Authors of articles on the effect of disabilities on functioning at school describe  
41 that parents of students with disabilities report that their children are participating less than  
42 children without disabilities in important school-related activities and have less contact with  
43 peers outside of school (Coster et al., 2013; Eriksson, Welandar & Granlund, 2007). The  
44 results of a study on the developmental course of preterm infants up to the age of ten years  
45 indicated that 50 % of a group of 38 preterm infants (gestational age < 32 weeks with an  
46 appropriate birth weight) have difficulties at school: 32% required special education, and  
47 24% had repeated a grade (Van Baar et al., 2006). From these articles, it can be concluded  
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that it is important for parents and the school to be alert regarding developmental problems and the relationship with social interaction of their preterm infant.

During the interviews, parents also described the interrelatedness between the real-time interaction process and its effect on long-term interaction and vice versa. Real-time social interaction moments are valuable learning moments for social and emotional development. There is evidence that the quality of early parent-infant interaction has an impact on social and emotional development at a later age. Forcada-Guex et al. (2006) found that preterm infants with parents who used a controlling pattern of interaction at six months corrected age have a lower personal social score at 18 months. Preterm infants with parents who employed a cooperative interaction style showed no differences from the term infants. Kleberg, Westrup & Stjernqvist (2000) determined that preterm infants who followed the Newborn Individualized Developmental Care and Assessment Program (NIDCAP), a program that teaches parents to anticipate the behavior of their preterm in the period at the NICU have better scores on the Parent-Child Early Relational Assessment Scale (PCERA) at age three than the control group that did not follow the program. Kyno et al. (2012) did not find any significant improvement in the social functioning of moderate or late preterm infants as a result of the 'Mother-Infant Transaction Program' (MITP) at 36 months corrected age (Kyno et al. 2012). Nordhov et al. (2012) found a "sleepers-effect" of the same revised program for children at the age of five. The greatest effects of the program were seen in the subscales attention and aggression. Bornstein, Hahn & Haynes (2010) also ascertained a cascading effect among social competence and behavioral adjustment. For example, children with less social competence at age four exhibited additional internalizing behaviors at the age of ten years and additional internalizing behaviors at the age of 14 years.

Further research should also address the experiences of the preterm born children about the parent-child interaction. Bastawrous et al. (2014) explored daughters' perceptions

about the parent-child relationship as a result of the parent experiencing a stroke. The results indicated that this event has an important impact on daughters' well being. The experienced stress of parents of the premature birth results in more controlling and intrusive behavior in the interaction with their infant in the first year of life (Feldman, 2007; Forcada-Geux et al. 2006; Tu et al. 2007). It would be valuable to explore the longterm effects of the parent-child interaction from the perspective of the child.

The model of social interaction (Figure 1) that emerged from our data demonstrates that social interaction is a dynamic and complex process influenced by many factors. In support preterm children in their social and emotional development, therefore, it is recommended to focus specifically on the relatedness between real-term social interaction experiences and long-term outcomes because of the cascading effects of early atypical social and emotional development.

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Table 1. Identified Themes, Categories, Examples of Codes

Theme	Categories	Examples of Codes
Child factors	Character	little fighter, passive
	Disabilities	autism, motor problems
	Appearance	scars, to small, overweight
	Capacities	school performance, intelligent
Self-regulation	Withdrawal	in themselves, want to be on his own
	Cooperation	playing together
	Balance	feeling comfortable
	Behavior	difficult behavior, busy
	Alertness	concentration, daydreaming
	Emotion Regulation	fearful, frustration
	Coping	dealing with limitations, adjust to new situations
Real-time Social Interaction	Sharing	sharing experiences, showing affect
	Initiatives	taking initiatives, search for contact
	Imitation	imitation of peers, imitation of play
Long-term Social Interaction	Social Skills	dares to stand up for himself, feeling responsible
		position in birth row, popularity at school, being accepted, being bullied
	Social Position	
Parental factors	Beliefs	norms and values
	Feelings	uncertainty about the future
Parenting	Regulating behavior	structuring, encouraging
	Coping	coping with the disabilities of their child
	Comparing	with brothers/sisters, with development of others
Social Environment	Activities	daily schedule, hobbies
	Interaction partners	peers, grand-parents
	Living place	living in the countryside, two living places
	School	school in the village, small school
Social Experiences	Contact	with peers, brothers/sisters, teacher
	Therapy	physiotherapy, speech therapy
	Functioning at school	learning problems, extra help at school

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**Figure 1., The model of social interaction**  
**Interrelation of themes of social interaction in preterm infants as**  
**perceived by the parents**

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